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Monetary & Fiscal Interactions: Big Picture

- Modeling convention
  - Canonical macro models assume
    1. MP can and does control inflation
    2. FP can and does ensure solvency
  1. MP optimal or obeys Taylor-type rule
    - unconstrained or “active”
  2. FP takes MP & private behavior as given and stabilizes debt
    - constrained or “passive”
- This modeling convention makes sense in normal times
  - embedded in textbooks (Walsh, Woodford, Galí)
- It also makes MP omnipotent & FP trivial
Why focus on price-level determination?
- monetary & fiscal policies surely have many other—and perhaps more important—effects on economy

Price-level determination is first step
- study price-level determination *before* studying more complicated things
- permits use of simple models

We are *not* interested only in inflationary effects of monetary & fiscal policies
Monetary & Fiscal Interactions: Big Picture

- Modeling convention a stretch since 2008
  - What have policies actually been doing?
    1. MP at or near zero lower bound
    2. FP bouncing between stimulus & austerity

1. Central banks aggressively pursuing growth
   - thrown Taylor principle out the window

2. Recent fiscal advice from IMF:
   - 2008–2009: urgent need to stimulate
   - 2010–2011: urgent need to consolidate
   - 2012: urgent need for stimulative consolidation ("growsterity")

- How can such policies anchor monetary expectations on inflation target?
- How can such policies anchor fiscal expectations on debt stabilization?
Monetary & Fiscal Interactions: Big Picture

- Need to understand implications of policy interactions that deviate from convention

  - Short-run reasons:
    - Europe enters second recession, emerging economies slowing down, U.S. on brink of new recession, Japan still stuck
    - Ubiquitous tradeoff between stabilization & sustainability
    - What are effect of fiscal policy when MP pegs rate?

  - Long-run reasons:
    - Aging populations & unfunded old-age benefits
    - Huge uncertainty about future fiscal policies
    - What are impacts of unresolved long-run fiscal stress?

- Conventional modeling cannot address these issues
  - assumes away the problems
Messages

1. Effects of monetary policy—open-market operations—depend on the sense in which fiscal policy is “held constant”

2. Effects of fiscal policy—bond-financed tax cuts—depend on the sense in which monetary policy is “held constant”

3. MP cannot uniquely determine inflation; FP can

4. MP can uniquely determine bounded inflation—if FP cooperates

5. If FP does not cooperate, MP cannot affect economy in usual ways

6. Without credible, enforceable fiscal rules that anchor expectations on appropriate FP behavior, fiscal disturbances always affect economy
General Points About Inflation

- Why does fiat currency have value?
- Because the government accepts currency—and only currency—in payment of taxes
- Inflation arises when government prints more currency than it eventually absorbs in taxes
  - people try to get rid of currency & buy things
  - pushes up prices & wages
- Government can soak up currency by selling bonds
  - does this when it spends more—handing out currency—than it taxes—soaking up currency
- Nominal bonds—like fiat currency—are promises to pay back more currency in future
- If government doesn’t soak up bonds with taxes... inflation
General Points About Inflation

- Just as money gets its value from taxes...
- Monetary policy gets its power from fiscal backing
- When fiscal backing is assured, MP operates as taught in textbooks
  - MP can control inflation
  - higher interest rates—open-market sale of bonds—reduce consumption & inflation
- But only if future taxes rise to soak up bonds
  - higher taxes eliminate the wealth effects of higher interest payments on government debt
- Otherwise, higher rates...
  - raises wealth, reduce value of bonds, increase aggregate demand & inflation

- It’s all about fiscal backing
The Model

- Endowment economy at the cashless limit; complete financial markets, one-period nominal debt
- Representative household maximizes

\[ E_0 \left\{ \sum_{t=0}^{\infty} \beta^t U(C_t) \right\} \]

subject to sequence of flow budget constraints

\[ P_tC_t + P_t\tau_t + E_t[Q_{t,t+1}B_t] = P_tY_t + P_tz_t + B_{t-1} \]

given \( B_{-1} > 0 \)

- \( Q_{t,t+1} \): nominal price at \( t \) of an asset that pays $1 at \( t + 1 \)
- \( m_{t+1} \): real contingent claims price
- \( Q_{t,t+1} = \frac{P_t}{P_{t+1}}m_{t,t+1} \): no-arbitrage condition
- Nominal interest rate, \( R_t \): \( \frac{1}{R_t} = E_t[Q_{t,t+1}] \)
The Model

- Can write HH’s real intertemporal b.c. as

\[ E_t \sum_{j=0}^{\infty} m_{t,t+j} C_{t+j} = \frac{B_{t-1}}{P_t} + E_t \sum_{j=0}^{\infty} m_{t,t+j} (Y_{t+j} - s_{t+j}) \]

\[ s_t \equiv \tau_t - z_t \]

- \( m_{t,t+j} \equiv \prod_{k=0}^{j} m_{t,t+k} \) is real discount factor, \( m_{t,t} = 1 \)

- HH choices also satisfy the transversality condition

\[ \lim_{T \to \infty} E_t \left[ m_{t,T} \frac{B_{T-1}}{P_T} \right] = 0 \]

- It is not optimal for HHs to overaccumulate assets
The Model

- Impose equilibrium, $C_t = Y$, and TVC to get two eqm conditions

$$\frac{1}{R_t} = \beta E_t \frac{P_t}{P_{t+1}} \equiv \beta E_t \frac{1}{\pi_{t+1}}$$

$$\frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t s_{t+j}$$

$s_t \equiv \tau_t - z_t$ (We assume $0 < E_t PV(s) < \infty$)

- Price sequence $\{P_t\}$ must satisfy these to be an eqm (markets clear & HH’s optimization problem solved)

- Without additional restrictions from policy behavior, there are many possible eqm $\{P_t\}$ sequences
The Model

- Specify policy rules & government budget constraint

\[
\frac{1}{R_t} = \frac{1}{R^*} + \alpha \left( \frac{1}{\pi_t} - \frac{1}{\pi^*} \right)
\]

\[
s_t = s^* + \gamma \left( \frac{B_{t-1}}{P_t} - b^* \right)
\]

\[
\frac{E_t[Q_{t,t+1}B_t]}{P_t} + s_t = \frac{B_{t-1}}{P_t}
\]

- Steady state

\[
\frac{B_{t-1}}{P_t} = b^*, \quad s^* = (1 - \beta)b^*, \quad R^* = \frac{\pi^*}{\beta}, \quad m^* = \beta
\]
The Model

- Combine MP rule w/ Fisher equation
- Combine FP rule w/ government budget constraint
- Dynamical system in inflation, $\pi_t$, and real debt, $b_t$, after imposing asset-pricing relations and market clearing

\[
E_t \left( \frac{1}{\pi_{t+1}} - \frac{1}{\pi^*} \right) = \frac{\alpha}{\beta} \left( \frac{1}{\pi_t} - \frac{1}{\pi^*} \right)
\]

\[
\frac{B_t}{P_{t+1}} - b^* = \frac{1 - \gamma}{\beta} \left( \frac{B_{t-1}}{P_t} - b^* \right)
\]

where $\frac{B_t}{P_{t+1}} \equiv b_t$ and $b^* = \frac{B_t}{P_{t+1}}$ in steady state and in equilibrium $m_{t,t+1} = \beta \frac{U'(C_{t+1})}{U'(C_t)} = \beta \frac{U'(Y)}{U'(Y)} = \beta$
Two Tasks of Policy

- Monetary & fiscal policy have two tasks: (1) control inflation; (2) stabilize debt
- Two different policy mixes that can accomplish these tasks

**Regime M:** conventional assignment—MP targets inflation; FP targets real debt (called active MP/passive FP)

**Regime F:** alternative assignment—MP maintains value of debt; FP controls inflation (called passive MP/active FP)

- **Regime M:** normal state of affairs
- **Regime F:** can arise in an era of fiscal stress
Regime M Policy Behavior

- MP behavior completely familiar: target inflation by aggressively adjusting nominal interest rates
- FP adjusts future surpluses to cover interest plus principal on debt
- In terms of policy rules

Regime M: \( \alpha/\beta > 1 \) & \( \gamma > 1 - \beta \)
Unique *bounded* equilibrium is

\[ \pi_t = \pi^* \]

And expected evolution of government debt is

\[ E_t \left( \frac{B_t}{P_{t+1}} - b^* \right) = \frac{1 - \gamma}{\beta} \left( \frac{B_{t-1}}{P_t} - b^* \right) \]

which ensures \( E_t b_T \to b^* \) as \( T \to \infty \)

But... also a continuum of equilibria with

\[ \lim_{T \to \infty} \pi_T = \infty \]

Neither MP nor private behavior rules out equilibria with \( \pi_t = \infty \)

This (minor?) anomaly or embarrassment can be resolved only by *fiscal policy*
Regime M’s Explosive Solutions

- Examine perfect foresight; generalize policy rule

\[ R_t = \beta^{-1} \pi_{t+1} \]
\[ R_t = \tilde{\Phi}(\pi_t) \]

- Solution satisfies non-linear difference equation

\[ \pi_{t+1} = \Phi(\pi_t) \]

- Two steady states: \( \pi^* \) and \( \pi_L \)

- \( \pi_L \) are zero lower bound for nominal interest rate
Regime M’s Explosive Solutions

Indeterminacy of steady state and dynamic path
Regime M Fiscal Policy

- What is FP doing in Regime M?
  - any shock that changes debt must create the expectation that future surpluses will adjust to stabilize debt’s value
  - people must believe adjustments will occur eventually
  - eliminates wealth effects from government debt
  - for MP to target inflation, fiscal expectations must be anchored on FP adjusting to maintain value of debt

- Can rule out equilibria with $\pi_t \to \infty$ where $b_t \to 0$, so $s_t \to 0$
  - FP commits to a fixed floor value of debt, $\underline{b}$
  - surplus rule becomes $s = (1 - \beta) \underline{b}$
  - this requires a switch in fiscal regime
  - ironically, by “passively” supporting MP, FP permits explosive inflation
An Equilibrium Condition

\[ \frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{t+j}] \]

- In Regime M...
  - MP delivers equilibrium inflation process
  - taking inflation as given, FP must choose compatible surplus policy
  - “compatible” means: stabilizes debt
  - imposes restrictions on \( E_t PV(s) \)
Primer on Monetary-Fiscal Interactions

- Monetary & fiscal policy have two tasks: (1) control inflation; (2) stabilize debt

- Beautiful symmetry: two different policy mixes that can accomplish these tasks

**Regime M:** conventional assignment—MP targets inflation; FP targets real debt (called active MP/passive FP)

**Regime F:** alternative assignment—MP maintains value of debt; FP controls inflation (called passive MP/active FP)

**Regime M:** normal state of affairs

**Regime F:** can arise in an era of fiscal stress

**Regime F arises in two ways**

1. Sargent & Wallace’s unpleasant monetarist arithmetic
Unpleasant monetarist arithmetic
- economy hits the fiscal limit
- surpluses unresponsive to debt
- seigniorage adjusts to stabilize debt
- produces high & volatile inflation

Many countries have guarded against this
- central bank independence
- clear mandate to control inflation—e.g., inflation targeting

Designed to force FP to be passive

Will focus on second way Regime F can arise
Monetary & fiscal policy have two tasks: (1) control inflation; (2) stabilize debt

Beautiful symmetry: two different policy mixes that can accomplish these tasks

Regime M: conventional assignment—MP targets inflation; FP targets real debt (called active MP/passive FP)

Regime F: alternative assignment—MP maintains value of debt; FP controls inflation (called passive MP/active FP)

Regime M: normal state of affairs
Regime F: can arise in an era of fiscal stress
Regime F arises in two ways
1. Sargent & Wallace’s unpleasant monetarist arithmetic
2. fiscal theory of the price level
Monetary-Fiscal Interactions: Regime F

- Governments issue mostly nominal (non-indexed, local currency) bonds
  - 90% U.S. debt; 80% U.K. debt; 95% Euro-area debt; most of Australian, Japanese, Korean, New Zealand, & Swedish debt
  - increasing important in Latin America: Chile (92%), Brazil (89%), Colombia (77%), Mexico (75%)

- In Regime F:
  - FP sets primary surpluses independently of debt
  - MP prevents interest payments on debt from destabilizing debt

- Nominal debt is revalued to align its value with expected surpluses
Regime F Policy Behavior

- FP responds weakly (or not at all) to state of government indebtedness
- MP prevents nominal interest rate from reacting strongly to inflation
- In terms of policy rules

\[
\text{Regime F: } 0 < \alpha/\beta < 1 \& \gamma < 1 - \beta
\]

- Focus on special case

\[
\alpha = 0 \& \gamma = 0
\]

- MP sets \( \{R_t\} \) exogenously; FP sets \( \{s_t\} \) exogenously
Regime F Equilibrium

- Pegs expected inflation

\[ E_t \left( \frac{1}{\pi_{t+1}} \right) = \frac{1}{\beta R^*} = \frac{1}{\pi^*} \]

- Price level determined by

\[ \frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{t+j}] \]

- At \( t \), \( B_{t-1} \) predetermined and \( E_t s_{t+j} \) a number
- \( P_t \) must adjust to equate value of debt to expected cash flows
Regime F Transmission Mechanism

\[ \frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t[s_{t+j}] \]

- Increase in current or expected transfers
  - no offsetting taxes expected, household wealth rises
  - lower expected path of surpluses reduces “cash flows,” lowers value of debt
  - individuals shed debt in favor of consumption, raising aggregate demand
  - higher current & future inflation and economic activity
  - long bonds shift inflation into future

- Demand for debt ↔ aggregate demand
Regime F Determinacy

\[ \frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{t+j}] \]

- How do we know that no other \( \{P_t\} \) sequence is an equilibrium (especially ones with \( P_t \to \infty \))?
- Suppose \( P_t \) is “too low”: debt over-valued relative to cash flows
  - agents substitute out of debt and into buying goods
  - higher aggregate demand drives up \( P_t \) until value of debt consistent with \( E_t PV(s) \)
- Symmetric argument if \( P_t \) is “too high”
An Equilibrium Condition

\[
\frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{t+j}]
\]

- In Regime F...
  - FP delivers unique equilibrium price process
  - taking inflation as given, MP must choose compatible interest rate policy
  - “compatible” means: stabilizes debt
  - imposes restrictions on \( P_t \) (& on MP, if price level to remain stable)
More on the Equilibrium Condition

\[ \frac{B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{t+j}] \]

- Ubiquitous: holds in any model, in any regime
  - cannot be used to “test” for regime
- It is not an “intertemporal government budget constraint”
  - have imposed market clearing, Euler equations, transversality (from private behavior)
- Government is not restricted to choose \( \{s_t\} \) to satisfy it for any \( \{P_t\} \) (but it is free to do so)
- Cochrane calls it a “debt valuation equation”
  - with only one-period debt, \( B_{t-1}/P_t \) is market value of debt
Why Fiscal Theory \( \neq \) Unpleasant Arithmetic

- Equilibrium conditions for nominal and real debt

Nominal: \( B_{t-1} = P_t \sum_{j=0}^{\infty} \beta^j E_t \left[ \tau_{t+j} - z_{t+j} + \frac{M_{t+j} - M_{t+j-1}}{P_{t+j}} \right] \)

Real: \( v_{t-1} = \sum_{j=0}^{\infty} \beta^j E_t \left[ \tau_{t+j} - z_{t+j} + \frac{M_{t+j} - M_{t+j-1}}{P_{t+j}} \right] \)

- Hypothetical increase in \( P_t \), all else fixed
  - raises nominal backing: support more nominal debt with no change in surpluses or seigniorage
  - lowers real backing: reduces seigniorage revenues

Fiscal Theory is \textit{not} about seigniorage: if \( M/P \) tiny, higher \( P_t \) raises backing of nominal debt but not of real debt

Unpleasant Arithmetic \textit{is} about seigniorage: growing real debt requires growing seigniorage & inflation
Role of Debt Maturity Structure: I

- Allow one- and two-period zero-coupon nominal bonds: $B_t(t+1), B_t(t+2)$; equilibrium condition is

$$\frac{B_{t-1}(t)}{P_t} + \beta B_{t-1}(t + 1) E_t \frac{1}{P_{t+1}} = \sum_{j=0}^{\infty} \beta^j E_t s_{t+j}$$

- MP determines the timing of inflation
  - stabilize expected inflation: forces adjustment in $P_t$
  - lean against current inflation: forces adjustment in $E_t(1/P_{t+1})$
  - tradeoff depends on maturity structure, $B_{t-1}(t + 1)/B_{t-1}(t)$
  - shorter average maturity $\Rightarrow$ need larger $\Delta E_t(1/P_{t+1})$
    to compensate for given $\Delta(1/P_t)$

- Message: MP not impotent, but it cannot control both actual & expected inflation
Role of Debt Maturity Structure: II

- Allow a consol: perpetuity that pays $1 each period
- Government budget constraint

\[
\frac{Q_t B_t}{P_t} + s_t = \frac{(1 + Q_t)B_{t-1}}{P_t}
\]

- Asset-pricing relation, in equilibrium

\[
Q_t = \beta E_t \frac{P_t}{P_{t+1}} (1 + Q_{t+1}) = \sum_{j=1}^{\infty} \beta^j E_t \frac{P_t}{P_{t+j}}
\]

- Central bank controls \( R_t \): \( 1/R_t = P_{St} = \beta E_t (P_t/P_{t+1}) \)
- Intertemporal equilibrium condition

\[
\frac{(1 + Q_t)B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t s_{t+j}
\]

- FP determines the \textit{present value} of inflation; MP determines the \textit{timing} of inflation
Role of Debt Maturity Structure: II

\[ Q_t = E_t \sum_{j=0}^{\infty} \left( \frac{1}{\prod_{i=0}^{j} R_{t+i}} \right) = E_t \sum_{j=1}^{\infty} \beta^j \left( \frac{1}{\prod_{i=1}^{j} \pi_{t+i}} \right) \]

\[ \frac{(1 + Q_t)B_{t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t s_{t+j} \]

- Any path of \( \{P_t\} \) consistent with these conditions is an equilibrium
- By choosing a (constrained) path for \( \{R_t\} \), MP determines when inflation occurs
- Consider two pegged paths for \( R_t \) —\( \dagger \) & *—with \( R_\dagger > R^* \Rightarrow Q_\dagger < Q^* \)
- \( \pi_t^\dagger < \pi_t^* \) but future \( \pi_\dagger > \) future \( \pi^* \)
- A higher nominal rate lowers current inflation, but raises future inflation
Role of Debt Maturity Structure: III

- Zero-coupon bonds
- Write government’s flow constraint as

\[ B_{t-1}(t) - \sum_{j=1}^{\infty} Q_t(t+j) [B_t(t+j) - B_{t-1}(t+j)] = P_t s_t \]

- Impose equilibrium on asset-pricing relation

\[ Q_t(t+j) = \beta^j E_t \frac{P_t}{P_{t+j}} \]

- Combine these

\[ \frac{B_{t-1}(t)}{P_t} - \sum_{j=1}^{\infty} \beta^j E_t \frac{1}{P_{t+j}} [B_t(t+j) - B_{t-1}(t+j)] = s_t \]
Role of Debt Maturity Structure: III

\[
\frac{B_{t-1}(t)}{P_t} - \sum_{j=1}^{\infty} \beta^j E_t \frac{1}{P_{t+j}} [B_t(t + j) - B_{t-1}(t + j)] = s_t
\]

- Suppose govt neither issues new debt nor repurchases outstanding debt, so 
  \(B_{t-1}(t + j) = B_t(t + j) = B_{t-1}(t), j > 0\)

\[
P_t = \frac{B_{t-1}(t)}{s_t}
\]

- Future deficits don’t matter (constant debt ⇒ no link between value of debt today & future surpluses)
- Inflation occurs only when surplus realized
- But current bond prices reflect \(E_t s_{t+j}\) which changes \(E_t(1/P_{t+j})\)

\[
Q_t(t + j) = \beta^j E_t \frac{P_t}{P_{t+j}}
\]
A Monetary Union

- Two-country union (Sims, Bergin)
  - world endowment: $Y_t = Y_{1,t} + Y_{2,t} = Y$
  - household in country $j$ maximizes
    \[
    E_0 \sum_{t=0}^{\infty} \beta^t u(C_{j,t})
    \]
    subject to
    \[
    C_{j,t} + \frac{B_{j,t}}{P_t} + \tau_{j,t} = Y_{j,t} + z_{j,t} + \frac{R_{t-1}B_{j,t-1}}{P_t}
    \]
  - country $j$'s government budget constraint
    \[
    \frac{D_{j,t}}{P_t} + \tau_{j,t} + v_{j,t} = z_{j,t} + \frac{R_{t-1}D_{j,t-1}}{P_t}
    \]
    $v_{j,t}$: lump-sum transfers from central bank
  - central bank’s budget constraint
    \[
    \frac{B_{m,t}}{P_t} + v_{1,t} + v_{2,t} = \frac{R_{t-1}B_{m,t-1}}{P_t}
    \]
A Monetary Union

- Equilibrium conditions
  - Euler equation for household $j$
    \[ u'(C_{j,t}) = \beta R_t E_t \frac{P_t}{P_{t+1}} u'(C_{j,t+1}) \]
  - Transversality condition for household $j$
    \[ \lim_{T \to \infty} \beta^T E_t u'(C_{j,t+T}) \frac{B_{j,t+T}}{P_{t+T}} = 0 \]
  - Market clearing conditions
    \[ C_{1,t} + C_{2,t} = Y_{1,t} + Y_{2,t} = Y \]
    \[ B_{1,t} + B_{2,t} + B_{m,t} = D_{1,t} + D_{2,t} \]

- Note: TVC applies to household’s holdings of $B_{j,t}$, not to individual government issues, $D_{j,t}$
  - Can have eqm with $D_{1,t} \to +\infty$ and $D_{2,t} \to -\infty$
A Monetary Union

- If $D_{1,t} \to +\infty$ and $D_{2,t} \to -\infty$, then govt 2 is completely financing govt 1, with no expectation of repayment
- Not a stable political economy equilibrium
- Govt 2 can improve well-being of its citizens by refusing to do this
- Same argument applies to central bank
- We will impose individual govt and CB solvency

\[
\lim_{T \to \infty} \beta^T E_t u'(C_{j,t+T}) \frac{D_{j,t+T}}{P_{t+T}} = 0
\]

\[
\lim_{T \to \infty} \beta^T E_t u'(C_{j,t+T}) \frac{B_{m,t+T}}{P_{t+T}} = 0
\]
A Monetary Union

- Assume \( u(C_{j,t}) = C_{j,t} - \frac{a}{2} C_{j,t}^2 \); adding Euler equations yields

\[
\frac{1}{R_t} = \beta E_t \frac{P_t}{P_{t+1}}
\]

- Applying this, country-specific consumptions are

\[
C_{1,t} = E_t C_{1,t+1}, \quad C_{2,t} = E_t C_{2,t+1}
\]

- Imposing eqm, get conditions

\[
\frac{R_{t-1}D_{1,t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{1,t+j} + v_{1,t+j}]
\]

\[
\frac{R_{t-1}D_{2,t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [s_{2,t+j} + v_{2,t+j}]
\]

\[
\frac{R_{t-1}B_{m,t-1}}{P_t} = \sum_{j=0}^{\infty} \beta^j E_t [v_{1,t+j} + v_{2,t+j}]
\]
A Monetary Union

Policy assumptions

- CB pegs nominal rate: $R_t = R^*$
- country 1 raises surpluses passively with debt
- country 2 sets surpluses independent of debt
- CB rebates portfolio earnings to countries, independent of their debt

Results

1. Union-wide inflation determined by country 2 (one with profligate FP)
2. News about country 2 surpluses affects inflation & value of debt in both countries
3. Requires adjustments in country 1’s surpluses
A Monetary Union

- How can CB retain control of inflation?
  - rebates to countries depend on each nation’s debt in the right way
  - make MP active (ECB in normal times)
- Efforts by the CB to reduce inflation
  - raise value of debt in both countries
  - requires higher rebates from CB to country 2 (backs debt of profligate country)
  - rebates to country 1 may need to be negative (taxes)
  - gives CB power to tax and transfer
- Message: A fiscal union can support monetary union’s efforts to control inflation